

Verbasceæ are didynamous, and it is evidently of that type. The corolla has become so shallow as to expose the stamens so that insects could light upon them, and the fifth stamen has resumed its antheriferous function. The enlargement of the lower lobe and the unequal length of the stamens, instead of indicating an incipient stage, as the author supposes, refer rather to a former condition. Although it is evident that natural selection must act, at least until after dissemination, we are told, in chap. xxxii, that "the principal period of the struggle for life takes place in the seedling stage, before any varietal and specific characters have appeared." The search for the reason of the author's views is rewarded in this chapter, where we read: "I must confess, it (natural selection) conveys nothing definite to my mind." Having observed that insects have something to do with the forms of flowers, the author is thus under the subjective necessity of referring these forms to their direct instead of their selective influence. However, the book can not be said to be without an important theoretical bearing, since it tends to support the view that but for the principle of selection the theory of evolution would be where Lamarck left it.—R.

NOTES AND NEWS.

A VOLUME on the folk-lore of plants, by T. F. Thiselton Dyer, is announced from the press of Appleton & Co.

THE BOTANISCHES CENTRALBLATT, which has for so long been published by Theodor Fischer, has been transferred to the house of the Gebrüder Gotthelft.

MR. B. FRANK LEEDS reports *Euphorbia peplus* as spreading rapidly in Santa Clara county, California. *E. Lathyris*, in the same region, attains a height of six or seven feet.

It is interesting to note that one-fourth the present membership of the Society for the Promotion of Agricultural Science is composed of botanists, and that so large a part as one-third of the papers printed in the proceedings for 1888 are botanical.

MR. F. H. KNOWLTON has in preparation a manual of palæobotany, which he hopes to have ready for the press by the end of the following year. The work will be illustrated from American material as far as possible, and will give an account of all the orders, and, when possible, the genera, of fossil plants.

THE WESTERN SOCIETY OF NATURALISTS met at the University of Illinois, October 24 and 25. A number of papers were read, relating to the teaching of botany. The following botanists were present and took part in the discussions: J. C. Arthur, Purdue University; W. J. Beal, Agricultural College of Michigan; T. J. Burrill, University of Illinois; D. H. Campbell, Indiana University; John M. Coulter, Wabash College; Stanley Coulter, Purdue University; Thomas McBride, Iowa University; W. H. Hatch, Rock Island; Charles Robertson, Carlinville, Ill.

FINE SPECIMENS of silicified wood (unnamed), suitable for cabinets and for microscopic study, have been sent us by Mr. Edgar Cherry, of Santa Rosa, California. He speaks of a petrified forest thirteen miles from Santa Rosa, covering twenty acres, and containing many large tree trunks in excellent preservation.

REV. A. B. HERVEY, of Taunton, Mass., recently became president of St. Lawrence University, Canton, N. Y. He is the author of "Sea mosses: an introduction to the study of marine algæ," and has, from time to time, rendered botany good service by translating works from the German. We hope his new duties will not draw his attention away from botanical pursuits.

DURING THE PAST season, Mr. F. H. Knowlton has been collecting fossil plants in the National Park, and has had excellent success. He writes of some slabs of stone a foot square containing half-a-dozen or more perfect leaves, ferns *in fruit*, and other prizes. In addition to the collections of fossil plants, he found time to gather living species, some of which are new to science.

MR. PETER HENDERSON, the well-known seedsman and florist of New York city, holds the opinion that a knowledge of general botany is of special service to the floriculturist, and emphasizes his conviction by offering a prize of \$100 for the best herbarium of native plants presented by a member of the Society of American Florists. The prize is to be awarded at the annual meeting of 1889.

EBERDT has reinvestigated the conclusions heretofore reached as to the influence of light in the formation of the palisade parenchyma of the leaf. In opposition to the statement of Stahl, the writer agrees in the main with Haberlandt, that it is less the sunlight which brings about the formation of the palisade than the variation in assimilation and transpiration. Especially is this true of the land plants, in which he concludes the illumination is unimportant except as it determines these other functions. (See abstract in Bot. Centralblatt, xxxv, 332.)

VERY COMPLETE herbarium specimens, including fruits and seeds, accompanied with dissections, both dry and in alcohol, are being prepared by M. Buysman, of Middelburg, Holland, and sold at twenty cents each, or forty cents for tropical species. Sets will be arranged to meet the wishes of purchasers. Mr. Buysman has been preparing and distributing such collections for some time, and his work has been commended by such eminent botanists as Professors Morren, de Bary, Engler, Oudemans and Rauwenhoff. He will be glad to correspond (in English) with any person willing to supply material for the distribution. Reasonable compensation is offered for fine material.

IN THE REVISED Gray's Manual, which is to be ready for the press next month, is to be included a revision of the Hepaticæ by Dr. Lucien M. Underwood. This will be of great advantage to students, as it will make more accessible diagnostic descriptions of these interesting plants, and, we hope, encourage their collection and study. There will be considerable changes from the "Catalog" published by the Illinois Laboratory of Natural History for Dr. Underwood some years ago, as much material has been accumulated since then. We wish a similar revision of the mosses might have been included. They can hardly be said to be suitably provided for by the Manual of Lesquereux and James.

DR. ALFRED FISCHER has demonstrated in an important research on various species of trees that glucose is a constant form of reserve material. The uniform statement of the text-books heretofore has been that all the glucose is transformed into starch for storage. But a study of twigs of trees in winter, using Fehling's solution, demonstrates clearly the presence of glucose. It is especially abundant in the cortex, but occurs also in the wood and pith. It is found either in dead cells (*i. e.*, those which have lost their protoplasm), or in the cell walls. It does not occur in living cells. Dr. Fischer is of the opinion that it must be considered as material which has escaped, by its presence in these places, transformation into starch. For the paper, see *Botanische Zeitung*, xlv, 405.

M. PRILLIEUX has announced to the French Academy of Sciences (*Comptes Rendus*, cvii. 447) the successful issue of an experiment with "Bordeaux mixture"—a watery solution of sulphate of copper and lime—in the treatment of the potato-rot. Of the treated plants all the tubers were healthy, while of the untreated more than 32 per cent. were affected. It would seem from the tenor of M. Prillieux' note that this was the first successful experiment in this direction; but this is not borne out by the report of Prof. Scribner for 1887 (*Department of Agriculture*, p. 331), which indicates the publication in 1886 of experiments which were at least encouraging. The department therefore sent out a circular suggesting the trial of this remedy for the rot, but received no replies.

DEVRIES has suggested¹ a new application of his well known method of plasmolysis, which may prove of much use to chemists in settling the formulæ of organic substances. The method is essentially the determination of the molecular weight of an unknown substance by comparing its plasmolysing power with that of some substance whose molecular weight is known. DeVries illustrates the process by determining the molecular weight of "raffinose," a sugar discovered in 1876, and for which three possible formulæ have been given. Solutions of cane sugar were prepared of definite strength, and likewise of raffinose. The purple epidermal cells on the under side of the leaf of *Tradescantia discolor* were used as an indicator. On comparing the isotonic coefficients of the substances, a molecular weight of 595.7 was obtained for raffinose. This agrees almost exactly with the weight assigned by one of the formulæ, viz., 594, and settles the composition as $C_{18}H_{32}O_{16}$.

PROF. HALSTED, of the Agricultural College, Ames, Iowa, is prosecuting a special study of American weeds, and desires reports upon the worst (say twenty) of these plant pests in any given locality. A full list of the synonyms of common names for each species will add greatly to the value of the report. It will, of course, be no easy task to balance the points in favor of, and against, some kinds of weeds, but upon this account the deductions from the several reports will be all the more valuable. The work of determining the range, extent of injury, and methods of eradication of our weeds must depend largely upon local observations extended over long periods of time, and we trust our fellow botanists and other interested readers will gladly aid in furnishing the desired information. Any one having a duplicate local printed list of plants or of a county or even a state, can most readily answer the question, Which are your worst weeds? by checking off the species, beginning with one (1) for the worst, and so on as far as possible. Satisfactory credit will be given to all who are pleased to aid in a more complete knowledge of the weeds of America.

¹ Bot. Zeit. xlv, 393.

THE PROCEEDINGS of the Society for the Promotion of Agricultural Science for the 1888 meeting have been distributed. The botanical subjects are as follows: Flora of the jack-pine plains of Michigan, by W. J. Beal, chiefly an enumeration of seventy-two of the most characteristic species of that region; Notes on fungus diseases in Massachusetts in 1888, by W. G. Farlow—an account of the first appearance at Newton, Mass., the present year, of *Sphaceloma ampelinum*, the anthracnose of the grape, and its destructive character, of the alarming extension of the hollyhock disease, *Puccinia Malvacearum*, since its first appearance in 1886, also notes on *Peronospora viticola* and *Æcidium Fraxini*; in the two topics, Potato flowers and fruit, and Tomato flowers and fruits, B. D. Halsted notes the sparsity of pollen in some varieties of potatoes, and the uniformity of the number of parts of the tomato flowers on the same plant with the slightly less number of cavities in the fruit; Some preliminary notes upon the relation of our native and naturalized flowering plants to soil and climate, by W. R. Lazenby; New observations on the fungus of black rot of grapes, and Successful treatment of black rot, by F. L. Scribner: A further study of the dandelion: a phase of evolution, by E. L. Sturtevant; to which may be added G. C. Caldwell's paper on the Present aspects of the question of the direct utility of the free nitrogen of the atmosphere for plant food.

DR. ISTVANFFI, of Klausenburg, describes (Bot. Centralblatt, xxxv, 343) methods for preparing various sorts of fungi. In alcohol one can preserve smaller fungi which are desired only for microscopic researches, Gasteromycetes most Ascomycetes, of the Hymenomycetes the colorless Agaricineæ and Polyporei but never the Boleti, and the Hydnei, Clavariei, Theliphorei and Tremellini. Salt water preserves the color and form better than alcohol, but preserves only for a short time. In addition to this fluid, a 0.1 p. c. solution of corrosive sublimate and a 2 p. c. solution of boric acid have been found useful. But the most difficult to preserve are the large Agaricineæ. For these the writer describes in detail the "section method." These fungi are best collected in clear weather immediately following a rain. They should be prepared the same day as collected, or, if this is not possible, they may be preserved for one or two days by being placed between moss under a bell jar. Spore preparations are to be made in the well-known way, and fixed by floating the paper, in the case of dark-spored species, in a fixative made of alcohol (200 gm.), sandarac (5 gm.), mastic (10 gm.) and Canada balsam (10 gm.). In the case of the white-spored species, the fixative should be sprayed on with an atomizer, or they may be floated in a solution of $\frac{1}{2}$ gm. of cooking-gelatin in 100 gm. of 20 p. c. alcohol, kept warm on a water bath. For the reception of the sections a gelatinized paper is to be prepared. For this purpose dissolve 100 gm. of gelatin in 500 gm. of water, and spread the hot solution as thickly and evenly as possible on strong white paper; dry the paper on a line and keep under pressure. A longitudinal section through the center of the fungus (0.5-1 mm. thick) is laid upon the paper after first moistening it. The whole of the membrane of the pileus and that of the stipe are also mounted on the paper after removing the flesh. The sections are then dried as ordinarily. For further details the paper must be consulted. Compare also this journal, xii. 271.